

IN THE CLAIMS

1. (currently amended) A method of tracking and predicting the capacity utilization of a goods delivery system, the system having at least one delivery agent and at least one delivery zone comprising a geographic area comprising a zip group having at least one zip code, each delivery agent having at least one delivery vehicle comprising at least one delivery vehicle slot, each delivery vehicle slot defined as a portion of the at least one delivery vehicle used to deliver a good, ~~each delivery zone having a delivery agent capacity utilization matrix comprising a plurality of delivery slots, the plurality of delivery slots defining a delivery capacity of the delivery agent,~~ the goods delivery system providing a respective first potential delivery date, a respective order, and the number of delivery vehicle slots the respective order will fill, said method of tracking capacity utilization comprising the steps of:

defining a delivery agent capacity utilization matrix comprising a plurality of delivery slots for each zone, the plurality of delivery slots relating to the total number of delivery vehicle slots for the delivery agent and defining a delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery slots and a respective number of used delivery slots for a specified period of time within the respective delivery zone;

determining whether the respective order can be shipped on the first potential ship date based on the number of available delivery slots, wherein said respective number of available delivery slots is equal to said respective zone maximum number of delivery slots minus said respective number of used delivery slots;

returning a respective date that the respective order can be delivered; and

updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery slots.

2. (currently amended) The method of tracking capacity as recited in claim 1, wherein the plurality of delivery slots define a delivery capacity of the delivery agent, the step of updating the respective capacity utilization matrix further comprises the step of calculating a workload utilization and storing the result in a workload value for each of said respective slots within the delivery zone.

3. (previously presented) The method of tracking capacity as recited in claim 2, wherein the step of calculating the capacity utilization comprises the step of calculating said respective workload value, wherein said respective workload value = (last workload value + (number of filled slots)/(zip group maximum)).

4. (original) The method of tracking capacity utilization as recited in claim 3, further comprising the step of setting a respective capacity signal when an over capacity condition and an under capacity condition has been detected.

5. (original) The method of tracking capacity utilization as recited in claim 4, comprising the step of setting a respective over capacity flag after determining that the sum of a set of said preselected workload values are greater than a predetermined over capacity value over a historical period.

6. (previously presented) The method of tracking capacity as recited in claim 5, wherein said predetermined over capacity value for the sum of selected designated days in said historical period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

7. (original) The method of tracking capacity utilization as recited in claim 4, comprising the step of setting a respective under capacity flag after determining that said set of preselected workload values are each less than a predetermined under capacity value over a historical period.

8. (original) The method of tracking capacity utilization as recited in claim 7, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

9. (original) The method of tracking capacity utilization as recited in claim 1, further comprising the step of predicting the probability of a future respective used slot being full based on historical over capacity conditions.

10. (original) The method of tracking capacity utilization as recited in claim 9, wherein the step of predicting the probability of a future respective used slot being full further comprises the steps of:

obtaining the workload values for a predetermined period of time; and

determining the probability that the next used slot will meet an over capacity condition using a distribution function;

wherein said over capacity condition is defined as the state when the workload value is greater than or equal to 100 percent.

11. (original) The method of tracking capacity utilization as recited in claim 1, further comprising the step of predicting whether the trend line of the capacity utilization is changing.

12. (original) The method of tracking capacity utilization as recited in claim 11, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is increasing when the slope of the regression line for a first fixed period of workload values is greater than zero, within a predetermined confidence interval.

13. (original) The method of tracking capacity utilization as recited in claim 11, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is decreasing when the slope of the regression line for a first fixed period of workload values is less than zero, within a predetermined confidence interval.

14. (original) The method of tracking capacity utilization as recited in claim 12, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

15. (original) The method of tracking capacity utilization as recited in claim 13, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

16. (original) The method of tracking capacity as recited in claim 1, wherein said specified period of time is thirty days.

17. (currently amended) A computer program storage medium readable by a computer system and encoding a computer program of instructions for executing a computer process for tracking and predicting the capacity utilization of a goods delivery system, the system having at least one delivery agent and at least one delivery zone comprising a geographic area comprising a zip group having at least one zip code, each delivery agent having at least one delivery vehicle comprising at least one delivery vehicle slot, each delivery vehicle slot defined as a portion of the at least one delivery vehicle used to deliver a good, ~~each delivery zone having a delivery agent capacity utilization matrix comprising a plurality of delivery slots, the plurality of delivery slots defining a delivery capacity of the delivery agent,~~ the goods delivery system providing a respective first potential delivery date, a respective order, and the number of delivery vehicle slots the respective order will fill, said computer process comprising the steps of:

defining a delivery agent capacity utilization matrix comprising a plurality of delivery slots for each zone, the plurality of delivery slots relating to the total number of delivery vehicle slots for the delivery agent and defining a delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery slots and a respective number of used delivery slots for a specified period of time within the respective delivery zone;

determining whether the respective order can be shipped on the first potential ship date based on the number of available delivery slots, wherein said respective number of available delivery slots is equal to said respective zone maximum number of delivery slots minus said respective number of used delivery slots;

returning a respective date that the respective order can be delivered; and

updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery slots.

18. (currently amended) The computer process as recited in claim 17, wherein the step of updating the respective capacity utilization matrix further comprises the step of calculating a workload utilization and storing the result in a workload ~~value~~ value for each of said respective slots within the delivery zone.

19. (previously presented) The computer process as recited in claim 18, wherein the step of calculating the capacity utilization comprises the step of calculating said respective workload value, wherein said respective workload value = (last workload value + (number of filled slots)/(zip group maximum)).

20. (original) The computer process as recited in claim 19, further comprising the step of setting a respective capacity signal when an over capacity condition and an under capacity condition has been detected.

21. (original) The computer process as recited in claim 20, comprising the step of setting a respective over capacity flag after determining that the sum of a set of said preselected workload values are greater than a predetermined over capacity value over a historical period.

22. (previously presented) The computer process as recited in claim 21, wherein said predetermined over capacity value for the sum of selected designated days in said historical period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

23. (original) The computer process as recited in claim 21, comprising the step of setting a respective under capacity flag after determining that said set of preselected workload values are each less than a predetermined under capacity value over a historical period.

24. (original) The computer process as recited in claim 23, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

25. (original) The computer process as recited in claim 17, further comprising the step of predicting the probability of a future respective used slot being full based on historical over capacity conditions.

26. (original) The computer process as recited in claim 25, wherein the step of predicting the probability of a future respective used slot being full further comprises the steps of:

obtaining the workload values for a predetermined period of time; and

determining the probability that the next used slot will meet an over capacity condition using a distribution function;

wherein said over capacity condition is defined as the state when the workload value is greater than or equal to 100 percent.

27. (original) The computer process as recited in claim 17, further comprising the step of predicting whether the trend line of the capacity utilization is changing.

28. (original) The computer process as recited in claim 27, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is increasing when the slope of the regression line for a first fixed period of workload values is greater than zero, within a predetermined confidence interval.

29. (original) The computer process as recited in claim 27, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is decreasing when the slope of the regression line for a first fixed period of workload values is less than zero, within a predetermined confidence interval.

30. (original) The computer process as recited in claim 28, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

31. (original) The computer process as recited in claim 29, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

32. (original) The computer process as recited in claim 17, wherein said specified period of time is thirty days.

33. (currently amended) A method of tracking and predicting the capacity utilization of a goods delivery system, the system having at least one delivery agent and at

least one delivery zone comprising a geographic area comprising a zip group having at least one zip code, each delivery agent having at least one delivery vehicle at least one delivery vehicle slot, each delivery vehicle slot defined as a portion of the at least one delivery vehicle used to deliver a good, ~~each delivery zone having a delivery agent capacity utilization matrix comprising a plurality of delivery slots, the plurality of delivery slots defining a delivery capacity of the delivery agent,~~ the goods delivery system providing a respective first potential delivery date based on a selected potential ship date, a respective order, and the number of delivery vehicle slots the respective order will fill, said method of tracking capacity utilization comprising the steps of:

defining a delivery agent capacity utilization matrix comprising a plurality of delivery slots for each zone, the plurality of delivery slots relating to the total number of delivery vehicle slots for the delivery agent and defining a delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery slots and a respective number of used delivery slots for a specified period of time within the respective delivery zone;

determining whether the respective order can be shipped on each day of a set potential ship dates based on the number of available delivery slots, wherein said respective number of available delivery slots is equal to said respective zone maximum number of delivery slots minus said respective number of used delivery slots;

wherein said set of potential ship dates includes the respective dates from the selected potential ship date to the first determined potential ship date;

returning an indication of the respective dates that the respective order can be delivered within said set of potential ship dates; and



updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery slots.

34. (currently amended) The method of tracking capacity as recited in claim 33, wherein the step of updating the respective capacity utilization matrix further comprises the step of calculating a workload utilization and storing the result in a workload ~~value~~value for each of said respective slots within the delivery zone.

35. (previously presented) The method of tracking capacity as recited in claim 34, wherein the step of calculating the capacity utilization comprises the step of calculating said respective workload value, wherein said respective workload value = (last workload value + (number of filled slots)/(zip group maximum)).

36. (original) The method of tracking capacity utilization as recited in claim 35, further comprising the step of setting a respective capacity signal when an over capacity condition and an under capacity condition has been detected.

37. (original) The method of tracking capacity utilization as recited in claim 36, comprising the step of setting a respective over capacity flag after determining that the sum of a set of said preselected workload values are greater than a predetermined over capacity value over a historical period.

38. (previously presented) The method of tracking capacity as recited in claim 37, wherein said predetermined over capacity value for the sum of selected designated days in said historical period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

39. (original) The method of tracking capacity utilization as recited in claim 36, comprising the step of setting a respective under capacity flag after determining that said set

of preselected workload values are each less than a predetermined under capacity value over a historical period.

40. (original) The method of tracking capacity utilization as recited in claim 39, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

41. (original) A method of predicting the capacity utilization of a goods delivery system, the system having at least one delivery zone, each delivery zone having a capacity utilization matrix comprising a plurality of slots, each slot having an associated workload value, said method of predicting the capacity utilization comprising the steps of:

predicting the probability of a future respective used slot being full based on historical over capacity conditions; and

predicting whether the trend line of the capacity utilization is changing.

42. (original) The method of predicting capacity utilization as recited in claim 41, wherein the step of predicting the probability of a future respective used slot being full comprises the steps of:

obtaining the workload values for a predetermined period of time; and

determining the probability that the next used slot will meet an over capacity condition using a distribution function;

wherein said over capacity condition is defined as the state when the workload value is greater than or equal to 100 percent.

43. (original) The method of predicting capacity utilization as recited in claim 41, further comprising the step of predicting whether the trend line of the capacity utilization is changing.

44. (original) The method of predicting capacity utilization as recited in claim 43, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is increasing when the slope of a regression line for a first fixed period of workload values is greater than zero, within a predetermined confidence interval.

45. (original) The method of predicting capacity utilization as recited in claim 43, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is decreasing when the slope of a regression line for a first fixed period of workload values is less than zero, within a predetermined confidence interval.

46. (original) The method of predicting capacity utilization as recited in claim 44, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

47. (original) The method of predicting capacity utilization as recited in claim 45, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

48. (original) The method of predicting capacity utilization as recited in claim 42, wherein said specified period of time is thirty days.